

#### ABSTRACT OF THE DISCLOSURE

A vascular prosthesis is constructed from a well-defined pore structure to allow uninterrupted ingrowth of connective tissue into a wall of the prosthesis. Several different methods can be used to produce the prosthesis, including a vacuum impregnation technique, a paste molding technique, a paste extrusion technique, a dip coating technique, and a melt extrusion technique. Furthermore, mechanical properties of the prosthesis are matched with mechanical properties of the host vessel, thereby overcoming problems of compliance mismatch.